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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,799	12/08/2000	Masahira Deguchi	826.1641 (JDH)	7224

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EXAMINER	
STEVENS, THOMAS H	
ART UNIT	**PAPER NUMBER**
2123	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/731,799	DEGUCHI, MASAHIRA	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-16 were examined.

Section I Response to Arguments

Drawings

2. The applicant is thanked for addressing this issue and thus the objection is withdrawn.

35 U.S.C § 112

3. The applicant is thanked for addressing this issue; however, it appears most of the 112 concerns stated on the first action (pgs. 2 and 3, numbers 3 and 4 respectively) were not changed in the amendment. The examiner withdraws the grammatically based 112-second rejection claims for 1-16; but ***does not*** withdraw rejections for 2,5,8,9, and 12 because of the indefinite language does not limit the scope of the claim.

35 U.S.C § 101

4. The applicant is thanked for addressing this issue. Independent claim 1 clearly states an apparatus with the various integral parts by design, which is clearly described. However, the problem is the dependent claim must obviously abide by the same the statutory claim type as the its independent, which not the case. For example, dependent claim 2, where the statement of, *" said detection unit* ***detects and unnecessary shape for an outline of the three-dimensional model"*** discloses "a process", which is

coupled to independent claim 1 being an apparatus, thus mixing two statutory invention types. The rejections stand.

35 U.S.C § 102

5. The applicant is thanked for addressing this issue. However, the applicant's arguments for withdrawing this rejection are not persuasive. The applicant states, "Ji, however does not address mush less teach or suggest how to implement a deletion list and amendment list processing system for optimizing a model". The latter is indirectly stated by Ji: *" In its new model is created, in addition to the solid model, is created, in addition to the solid model to represent the interactions among the features already recognized (or designed) within the part. When a new feature is added (or deleted), the model checks what other features are affected (through iteration) by this new feature. Only the affected features are updated with new changes. That is, the model in this approach maintains a graph whose nodes are features and whose arcs represent dependencies (interactions) of the features. When a new feature is removed from the part, only the other features dependent upon this feature needs to be updated. The updating occurs through feature recognition, which is accomplished by searching for closed loops of edges within the solid model (pg. 305: left column, second paragraph)."* Ji also states on pg. 292, left column, lines 6-11, the following: *"...Specifically, the modified geometric or topological information may need to be recovered in ordered to complete the broken or changed patterns prior to recognition or matching".* Summarily, these features are retrievable shape configuration sources.

The applicant states the Ji does not address much less teach or suggest how to implement a deletion list. To reiterate the quote from the previous rejection: Ji also states on pg. 292 the following: *"...Specifically, the modified geometric or topological information may need to be recovered in ordered to complete the broken or changed patterns prior to recognition or matching".*

The applicant states Ji fails to address deleting shapes that are offset. Ji states on page 276, left column, 3rd paragraph through page 277, left column, lines 1-17 how CADs execute protrusion of the part (pg.277, line 11, specifically).

Summarily, these functions are databanks or retrievable shape configuration sources. The deletion features the applicant states is an inherent feature of Ji because any unused portion is kept in a temporary file and unused portions are eventually deleted. Thus the rejection stands.

35 U.S.C § 103

6. The applicant is thanked for addressing this issue. Rejection is withdrawn.

Section II Rejections

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. The claims are generally narrative and indefinite, failing to conform to current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. For example: **Claim 5:** "of the one shape" perhaps should say "into one shape".

9. Claims 2,5,8,9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

Claim 2: "unnecessary"-vague and indefinite.

Claim 8: "arrangement plane"--indefinite.

Claim 9: "pattern shapes"—indefinite.

Claim 12: "as necessary"—indefinite.

10. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph as being ambiguous based the claims claiming an apparatus and a process. For example claim 1 states an apparatus and a process: *A model optimization* ***apparatus,*** *comprising: a detection unit* ***detecting one or more redundant shapes from a plurality of shapes forming a*** *three-dimensional model of an object a deletion unit deleting shape information relating to the one or more redundant shapes; and a construction unit* ***reconstructing a three-dimensional model of the object according to remaining shape information.***

Claim Rejections - 35 USC § 101

11. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-16 are rejected under 35 U.S.C. 101 because based on the theory that the claim is directed to neither an "apparatus" nor a "process," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. Id.at *1551.*

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-16 are rejected under U.S.C. 102(b) as being anticipated by Ji et al. (Thesis: 1997). Ji et al discloses various methodologies to overcoming integration barriers between design and process planning by 3-D CAD data design. Specifically, this paper discloses the numerous arithmetic approaches that encompass the latter techniques of geometric modeling and representation schemes (Abstract). In specific:

Claim 1: *A model optimization apparatus, comprising: a detection unit detecting one or more redundant shapes from a plurality of shapes forming (pg. 286, column 1, paragraph 3, line 7) a three-dimensional model of an object (pg. 270, column 1,section 2.1, line 3), and generating a list of shapes to be deleted and a list of shapes to be*

amended among the one or more redundant shapes (pg. 305, left column, second paragraph); a deletion unit deleting shape information of shapes in the list of shapes to be deleted, and amending shape information of shapes in the list of the shapes to be amended (pg. 305, left column, second paragraph); and (pg. 286, column 1, paragraph 3, lines15-18) a construction unit reconstructing a three-dimensional model of the object according to remaining shape information (pg. 286, column 1, paragraph 3, lines 20-23) including the amended shape information and shape information of shapes other than one or more redundant shapes.

Claim 2: *The apparatus according to claim 1, wherein: said detection unit detects an unnecessary shape for an outline of the three-dimensional model (Ji: pg. 270, column 1,section 2.1, line 3) from the plurality of shapes; and said deletion unit deletes the shape information about the unnecessary shape (pg. 305, left column, second paragraph).*

Claim 3*: The apparatus according to claim 2, wherein: said detection unit detects two shapes having same outline information and offsetting each other (pg. 276, left column, 3rd paragraph through 277, left column, lines 1-17); and said deletion unit deletes the two shapes (pg. 286, right column, lines 50-51 through pg. 287 with figure 13).*

Claim 4: *The apparatus according to claim 2, wherein: said detection unit detects two shapes having different outline information and offsetting each other (pg. 276, left*

column, 3rd paragraph through 277, left column, lines 1-17); and said deletion unit deletes the two shapes (pg. 286, right column, lines 50-51 through pg. 287 with figure 13).

Claim 5: *The apparatus according to claim 1, wherein: said detection unit detects two or more shapes which can be represented by one shape from the plurality of shapes; and said deletion unit integrates shape information of the two or more shapes into shape information of the one shapes (pg. 286, right column, lines 50-51 through pg. 287 with figure 13).*

Claim 6: *The apparatus according to claim 5, wherein: said detection unit detects two shapes having same sectional shape information; and said deletion unit deletes shape information of one of the two shapes, amends shape information of the other shape, and integrates shape information of the two shapes into shape information of one shape (pg. 286, right column, lines 50-51 through pg. 287 with figure 13).*

Claim 7:*The apparatus according to claim 5, wherein: said detection unit detects two shapes having same height information (pg. 286, right column, lines 50-51 through pg. 287 with figure 13); and said deletion unit deletes shape information of one of the two*

shapes, amends shape information of the other shape, and integrates shape information of the two shapes into shape information of one shape.

Claim 8: *The apparatus according to claim 5, wherein: said detection unit detects two or more shapes having a same arrangement plane information and same height information; and said deletion unit amends shape information of one of the two or more shapes (pg. 288, figure 14(a)) deletes shape information of other shapes, and integrates shape information of the two or more shapes into shape information of one shape.*

Claim 9: *The apparatus according to claim 5, wherein: said detection unit detects two or more shapes defined as pattern shapes (pg. 286, right column, lines 50-51 through pg. 287 with figure 13); and said deletion unit amends shape information of one of the two or more shapes, deletes shape information of other shapes, and integrates shape information of the two or more shapes into shape information of one shapes (pg. 273, column 2, lines 29-47; and pg. 274, column 1).*

Claim 10: *The apparatus according to claim 1, wherein: said detection unit comprises: a deletion target storage unit storing the list of the shapes to be deleted (pg. 305, left column, 2nd paragraph); and an amendment target storage unit storing the list of the shapes to be amended.*

Claim 11: *The apparatus according to claim 10, wherein said deletion unit amends the shape information of the shapes to be amended according to at least one of vertex coordinate information (pg. 286, column 1, lines 18-25; and pg. 303, left column, lines 13-17) and height information included in deleted shape information.*

Claim 12: *The apparatus according to claim 1, wherein said construction unit comprises a unit for amending arrangement reference information, as necessary, included in the remaining shape information, and reconstructs the (pg. 301,column 2, paragraph 3; figure 19; and pg. 290, column 1, 1 paragraph) three-dimensional model according to the amended arrangement reference information.*

Claim 13: *The apparatus according to claim 1, wherein said construction unit comprises a unit for generating a pseudo shape corresponding to arrangement reference information included in the remaining shape information, and reconstructs the three-dimensional model using the pseudo shape without (pg. 277, column 1, lines 10-17) amending the arrangement reference information.*

Claim 14: *A computer-readable storage medium storing a program used to direct a computer to perform (pg. 265, right column, lines 21-41): detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object (pg. 286, left column, lines 41-48); and generating a list of shapes to be deleted and a list of shapes to be amended among the one or more redundant shapes (pg. 286,*

left column, lines 41-48; and pg. 292, left column, lines 6-11with pg.305, left column, 2nd paragraph) ; deleting shape information of shapes in the list of the shapes to be deleted, and amending shape information of shapes in the list of the shapes to be deleted, and amending shape information of shapes in the list of the shapes to be amended(pg. 286, left column, lines 41-48; and pg. 292, left column, lines 6-11with pg.305, left column, 2nd paragraph); and reconstructing a three-dimensional model of the object according to remaining shape information including the amended shape information and shape information of shapes other than the one or more redundant shapes(pg. 286, left column, lines 41-48; and pg. 292, left column, lines 6-11with figure 15; and pg.305, left column, 2nd paragraph).

Claim 15: *A method of optimizing a model, comprising: automatically detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object, and generating a list of shapes to be deleted and a list of shapes to be amended among the one or more redundant shapes (pg. 286, left column, lines 41-48; pg. 292, left column, lines 6-11with figure 15; and pg.305, left column, 2nd paragraph); automatically deleting shape information of shapes in the list of the shapes to be deleted, and amending shape information of shapes in the list of the shapes to be amended (pg. 292, left column, lines 6-11with figure 15pg. 305, left column, second paragraph); and automatically reconstructing a three-dimensional model of the object according to remaining shape information including the amended shape information and*

shape information of shapes other than the one or more redundant shapes (pg. 301, right column, 3rd paragraph, 1-15; and pg. 305, lines 20-28).

Claim 16: *A model optimization apparatus, comprising: detection means for detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object and generating a list of shapes to be deleted and a list of shapes to be amended among the one or more redundant shapes (pg. 286, left column, 3rd paragraph, lines 41-43; and pg. 292, left column, lines 6-11with figure 15); deletion means for deleting shape information of shapes in the list of the shapes to be deleted, and amending shape information of shapes in the list of the shapes to be amended; and construction means for reconstruction a three-dimensional model of the object according to remaining shape information including the amended shape information and shape information of shapes other than one or more redundant shapes (pg. all 292 (i.e., suspended features, verified features, etc.) with pg. 286, left column, 3rd paragraph).*

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704. The fax number for the group is 703-872-9306.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

June 24, 2004

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER

THS